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# The seven voices of information literacy (IL)

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## Abstract

The purpose of this research was to discover the conceptions of information literacy (IL) prevalent across multiple stakeholder groups in an international middle school community. The research involved students, parents, teachers, librarians, IT personnel, administrators and leadership in recorded focus group discussions. Using a phenomenographic approach the qualitatively different ways that stakeholder groups understood IL were revealed. The study found extensive variation in the ways IL is understood, revealing 27 different conceptions of IL shared to varying degrees across stakeholder groups. The findings add to our knowledge of IL in several ways: several new conceptions of IL surfaced from this more diverse sample and new light was shed on the way that people's perceptions and experience of their information context influences their thinking about IL. The article fills a gap in the literature on two levels: firstly, by providing a multi-stakeholder perspective on IL offsetting the multitude of single stakeholder IL studies and secondly by focusing on an international middle school environment which has not been a context for IL research in the recent past.

## Keywords

Conceptions; information context; information literacy; multi-stakeholder; middle school; phenomenography

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## 1. Introduction

This article focuses on findings from research into the conceptions of information literacy (IL) held by seven stakeholder groups in an international English-speaking school community addressing the question 'How does an international school community define and understand IL?'

The rationale for this study was grounded in two key concerns that dominate the literature on IL over the past 20 years and which are understood to be negatively impacting information literacy education: the lack of shared language and understanding of IL and the need to attend to the issue of context when considering IL education and research. Todd (1999, p.27) in his review of challenges facing IL in the Australian education context spoke of the 'conundrum' of defining IL arguing 'that despite the volume of literature about IL and the widespread acceptance of the term, what IL is remains a vexed question'. Bruce (1999, p.34) echoes Todd's thinking, arguing that 'some of the limiting factors in developing interest in IL include the term itself which does not clearly communicate its meaning...'. Bruce's seminal phenomenographic study of conceptions of IL in the workplace context (Bruce, 1997) helped to shift the focus away from previous sequential skills ideas of IL uncovering the extensive variation in the experience and understanding of IL.

Nevertheless the 'conundrum' as referred to by Todd (1999) continues to be reported across different continents and contexts. In UK higher education, for example, Andretta, Pope and Walton (2008, p.43) highlight an 'urgent need to establish a more proactive dialogue between

librarians, faculty and students' to redress the 'lack of joined up thinking [about IL] prevalent at the institutional level...' identified in their research. Boon, Johnston and Webber (2007, p.204) lend further weight to the idea of the prevalence of differing conceptions of IL and based on their phenomenographic study of IL conceptions amongst UK English faculty, recommended 'Librarians working with English faculty on IL need to be aware of differences in conceptions between themselves and academics to work effectively'. Similarly, Williams and Wavell (2007) in their phenomenographic study of UK secondary school teachers' conceptions of student IL identified a pressing need for greater dialogue involving students, librarians and teachers to work towards the development of a common ground understanding of IL.

In the European context Virkus (2013, p.252) highlights the persistent confusion as to what the term IL means arguing this is 'often an obstacle to forming an institutional or national policy as well as collaborating internationally'. Virkus' research in the context of online distance learning found that the lack of shared language and conceptions of IL was having 'an adverse impact on the implementation of programmes that facilitated development of independent research competencies' (Virkus, 2013, p.254).

More recent studies of conceptions of IL conducted by Bønlokke, Kobow and Kristensen (2015) in the Danish higher education context suggest that the 'conundrum' is not going away despite persistent calls for it to be addressed. Their study found that 'educators possess a different experience of IL from librarians and this can be a problem when challenging students on IL for their assignments', highlighting the need for a collaborative approach based on '...a joint conceptual understanding of IL' (2015, p.12). Cope and Sanabria (2014), in their phenomenological study of IL amongst academics in the United States, found that the ways faculty think and speak about IL is very much rooted within their own disciplines and therefore they do not see IL as something distinct from literacies in their discipline.

At the practice level Streatfield et al (2011, p.12) in their study of IL in UK schools found that 'IL has taken over from information skills in the past few years as the preferred term used in schools to describe the skills and abilities that students need to develop to locate, obtain, evaluate and exploit information in all its forms'. However, they also noted that 'such terms as library skills, research skills and study skills are more familiar to teachers but are less comprehensive in their scope'. In the US higher education context Cope and Sanabria (2014, p.3) compared the ways faculty from different disciplines perceived and spoke about IL, finding that:

Although they [faculty] talked about IL in different ways that resonate with the conversations with LIS, it was impossible to disentangle their discussions of IL from their perspectives on pedagogy and higher education more generally.

The idea however is not to strive for a single conception of IL. Rather the challenge is to reach a shared understanding of the variation in the ways IL is understood and, to attempt through inclusive dialogue and research to deliver a more holistic and representative understanding of IL. Indeed Todd (2017) highlights that ongoing attempts to reach a singular 'one size fits all' 'super' definition of IL is limiting the potential for the development of more inclusive and sustainable understanding of IL to inform information literacy education in diverse and often complex contexts.

The need for a focus on understanding IL in context is a second major theme emanating from recent literature. Lloyd's work on information landscapes (2010) provides a thought provoking analysis of the centrality of the context to understanding IL. Specifically, Lloyd argues (2010, p.1) that 'As our research into IL proceeds....it requires a deep understanding of the complex social processes and arrangements that shape information and how it is used within any given context'. By inviting participants to share their perception of their information landscape as a

stepping stone to sharing their conceptions of IL this study seeks to shed some light on the relationship of context and conceptions of IL in a school setting.

## **2. Methods**

The overall aim of the research was to identify, compare and contrast conceptions of IL across seven stakeholder groups including students, parents, teachers, librarians, IT personnel, administration and leadership, in an international middle school community. The research used a phenomenographic approach, which is a qualitative research approach that aims to discover and describe the different ways a group of people experience and understand a phenomenon in the world around them (Marton, 1999).

### **2.1 Selection of project school**

The rationale behind selecting an international school as the focus for the research originated in the researcher's professional experience as a school librarian in different international schools in Europe, where a lack of shared understanding of IL was found to be negatively impacting the potential for its development. Moreover, there was a gap in the literature as to the ways IL was conceptualised in international school contexts. Accordingly, the selection of the project school was based on the practical need to conduct the research in an accredited international school context located near the researcher's home base as multiple focus groups would be scheduled over a protracted period of a school year. In addition, there was a need to conduct the research through the medium of English in an English-speaking environment. The researcher's professional background of working in international school environments was a factor which helped during the initial approach to the school to conduct the study. It was agreed with the school leadership that the optimal approach in terms of attracting a sample would be to narrow the appeal for faculty and student participation to the grade 6 level students and the middle school community.

### **2.2 Data collection**

As the research was undertaken in a school context within school hours the sample of participants necessarily had to be self-selecting. Invitations to participate were sent to stakeholder groups through a combination of personal and electronic based communication resulting in 52 members of the school community volunteering. Reflecting the international nature of the school almost half of the participants were American and the remaining participants came from Canada, the UK, Germany, Netherlands, Norway, Sweden, France, Spain, Italy, Belgium, Australia, Russia, South Africa, Singapore, Venezuela, Malaysia and Japan. The sample consisted of 17 students, 15 parents, seven teachers, two IT teachers (one was involved with the pilot and the other in the main research project) and a member of the IT technical support personnel, two library staff, three members of the leadership team including the Principal, Curriculum Director and IT Director and five members of the administration team. As young children (ages 10 to 11, Middle school: grade 6 level) were involved the presence of a member of school staff was organised for all group discussions involving children with meticulous attention being given to participation consent forms. In practice, this involved students being required to give their written consent and parents signing off on their child's participation. Permission from all adult participants was also obtained.

Data was collected by means of focus group discussions, each focus group discussion being specific to one stakeholder group. This approach facilitates participant-participant discussion using shared languages and experiences, rather than the participant-researcher dialogue of individual interviews. Discussion groups have previously been used successfully in phenomenographic research including a study of school teachers' conceptions of student IL (Williams & Wavell, 2007).

A key element in the design of the data collection process was the development of the questions used to seed open discussion within each group. Two important considerations were:

- a) the advice of Marton (2009) to ask about the phenomenon in a way that allowed participants' own experiences to form the basis to draw out their understandings of the concept;
- b) the importance of avoiding the use of the specific term 'information literacy' which may not have been recognised and/or commonly used by stakeholders (Andretta, Pope & Walton, 2008; Gross & Latham, 2011); the phrase 'effective use of information for learning' was used in place of IL.

Four key questions were used to encourage discussion about participants' understandings of IL as well as their perceptions and experiences of their information context:

1. How would you describe your information world?
2. Based on these descriptions of how you see and experience the information world, what are your ways of understanding the effective use of information for learning?
3. Please share examples of what this looks like in practice?
4. Looking to the future how do you see the information world and what will that mean for how you understand using information for learning?

In phenomenographic research the dimensions of interview questions or prompts which stakeholders 'choose to answer is an important source of data for the researcher because they reveal an aspect of the individual's relevance structure' (Marton, 2005, p.153). Accordingly, care was taken to facilitate the focus group discussions in a manner that was open to the direction which participants sought to focus on but simultaneously maintaining a focus on the aim of the research. In practice, once participants began to share their ideas about the information context they did so by relating to their information use practice and experiences whether for work-based, school-related or home-based teaching and learning. This created the natural segue into participants sharing their understanding of IL. This powerfully demonstrates the argument underlying phenomenography which is that the subject and object are seen as one (Åkerlind, 2005, p.210).

A pilot of the data collection process and questions was conducted with two different parent groups, two grade 7 teachers, an IT teacher at the project school, an IT consultant based in USA, and the school Principal, none of whom were involved in the main data collection. Given the sensitivity of approaching students it was agreed with the Principal that the first student focus group would be used as a means of testing procedures for students if necessary. As a result, procedures for student focus group discussions were adjusted to include: a) further brief clarification of areas to be addressed at the outset of each focus group discussion and b) visual aids relating to key questions, helping to overcome the challenges of the age range involved and the fact that English was not the first language for some participants. Accordingly, visual mind maps were used to guide the focus group discussion and scenarios were used to help initiate discussion. For example, students were invited to imagine they had been appointed as information coaches to younger students, and to share their ideas about their information world and experiences from this perspective.

## 2.3 Data analysis

The seventeen focus group discussions varied from 45 minutes to 90 minutes and were recorded and transcribed in full to facilitate detailed analysis. Transcripts were copied into coding frame documents for initial reading, theming and noting of preliminary codes. To surface variation in how the phenomenon of IL was understood a form of eclectic, elemental and affective coding based on Gibbs reflective cycle (MacDuff, 2010) for textual analysis was invoked. This cycle of reflective analysis focused on:

1. Descriptions: Which parts of the text are descriptions of the information context, conception of IL or IL experience?

2. Emotion: Which parts manifest feelings towards or about the information context and information use experience?
3. Experience: Which parts of the text evaluate experience whereby participants share how the experience was, such as positive, negative, or frustrating, and causing them to be cautious or excited for example?

The coding method involved primarily in vivo coding of selected complete statements from the transcript that reflected the various dimensions of conceptions discussed in the context of information use for learning. Preliminary analysis of the meanings of these statements was undertaken using the three levels of analysis – descriptions, emotion and experience – assigning codes to capture the meanings and ultimately to surface variation in perceptions of the information context and conceptions of IL. As Bruce (1999, p.38) points out, researchers using this approach ‘ask what and how questions such as what meanings are being experienced and how is that meaning constituted?’ These two questions became the essential questions guiding data coding and analysis.

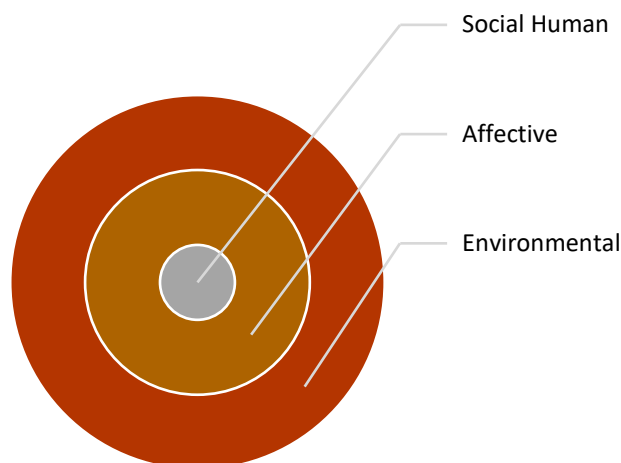
In practice this involved a constant interpretive and analytical process to discern variation and explain the nature of the variation between categories of description. The second and subsequent coding cycles were completed using the NVivo programme for qualitative research whereby a coding tree was created to begin coding up selected quotations. At this point the analysis and focus shifted from stakeholder groups and what they said towards a focus on understanding ‘the meanings embedded in the quotes themselves. In this sense each quote has two contexts in relation to which it has been interpreted: first the interview from which it was taken and second, the pool of meanings to which it belongs’ (Åkerlind, 2005, p.325). As the interpretation, comparison and synthesis continued it became clear that statements of meaning in relation to information use for learning were bound up with ways of seeing either the information context or conceptions of IL. Consequently, a process was followed of systematically cycling through all the quotes previously coded under the different strands and assigning them to pre-existing or additional new codes under the information context and conceptions of IL parent nodes. In this way the criterion attributes for each group were made explicit. Throughout the coding analysis process the authors engaged in ongoing debate as to the categories of description emerging and presentations of preliminary findings were made to different critical audiences at both the international school level and library & information science (LIS) audiences in higher education. Furthermore, every attempt was made through a rigorous and systematic analytical approach to ensure that the categories of description as described in the next section, ‘revealed something distinctive about a way of understanding the IL phenomenon’, that categories were ‘logically related’ and ‘that the critical variation in experience observed in the data were represented by as few categories as possible’ in accordance with Marton and Booth’s three quality criteria as noted by Åkerlind (2005, p.323).

The next section presents the findings from the study by firstly addressing the perceptions of the information context held by participants which in turn will be followed by presenting IL conceptions arising from each of the seven stakeholder groups. Participant quotes are coded by a letter designating the stakeholder group as follows: S(Student), P(Parent), T(Teacher), LB(Librarian), IT (IT Personnel), A(Administration) and lastly L(Leadership).

### **3. Findings**

#### **3.1 Perceptions of the information context**

All stakeholder groups perceived their information context (IC) to be characterised by three dimensions: the environmental, social human and affective. These three dimensions are related and form part of the whole perceptual orientation and experience of the information context as represented in Figure 1.



**Figure 1:** Stakeholder groups perceptions of information context (Cunningham, 2017)

The social human dimension is placed at the centre as people were perceived by stakeholders to play a role both as sources of information and as mediators and creators of the IC and experience. For example:

**S8** “You could ask your dad or parents whether they have information because they may have studied it...”.

**S16** “...The library is pretty good because ...with the internet like you just ask it but like when you ask the librarian like she is really thinking it through. The computer doesn’t really have a brain so like it’s better to tell a person than a computer because the librarian she might actually know what you are looking for and what you actually mean. So, it’s like better to go to the library it might be more useful ... you can tell her what you mean, and she can help you a little bit”.

The outer environmental layer tended to arise early in the discussion and there was a strong web-centric perspective in this regard. For example:

**S3** “[Re books] not much anymore now I mostly use only computers it is much quicker for me”.

All the stakeholder groups, particularly parents, library, IT and teachers, shared their sense of their information context as multifaceted. Where words were difficult to find, metaphors were used such as the information landscape is like a ‘double edged sword’ (P40) and a place of ‘jewels’ amidst the ‘garbage’ (LB21). Moreover, there was a perception that within the environmental dimension, books were seen to be on the decline with the rise of the web and digital-based sources.

Finally, the affective dimension is placed in the middle layer because it is in relating to people, web-based interactions and multi-media information sources that stakeholders’ feelings within and about the information context and experience arise. All stakeholder groups held a range of positive and negative feelings towards their engagement with information. For example, the following quotations illustrate the more cautious sense held by students regarding web-based information:

**S9** “You need to take care of what you use”.



**S15** “There is false information out there”.

**S4** “And you can’t always trust the search the web site, so you have to look for an approved sign that it’s true.”

In contrast, a much more positive autonomous information use experience is seen in this student’s sense of fun and a more transformative experience through using an interactive online subscription offered via the school library web pages:

**S2** “For example we had to do a report for social studies on an ancient Egyptian and I got Cleopatra and I was all over the internet trying to find information and it was all mixed up and I couldn’t understand it. And I went on Brain Pop and there it all was in a really short video all the information was laid out it. They have really funny videos and the kids like to watch them. Then there are little quizzes to make sure you understand. You can also try the activity boxes where you can do the activity and it tells you if you may want to watch the video again just to make sure you understand the subject.”

Such perceptions of their information context have an important role in shaping stakeholders’ understanding of IL, as will be seen in more detail in section 3.2.

### **3.2 Conceptions of IL**

Boon, Johnston and Webber (2007, p.214) note how ‘The products of a phenomenographic analysis are an outcome space and categories of description which detail each conception and include quotations which illuminate the conceptions’. In this section the seven outcome spaces are presented in respect of the 27 conceptions of IL that surfaced from this study (Tables 1-7). Each outcome space presents the categories of description of IL as understood by the stakeholder group in column 1, followed by selected quotations that illuminate the way of seeing IL. The right-hand area of the table provides a sense of the nature of the variation that prevails in how participants see IL which appears to be influenced by their perceptions of the information context. Finally, Table 8 profiles all 27 conceptions followed by discussion and implications of the findings for information literacy education.

**Table 1:** Outcome space: Students' conceptions of IL

IL is understood as:	Illuminative quotations	Relationship of conception to perceptions of information context (IC)		
		Environmental	Social Human	Affective
A process of using IT tools.	<b>S13</b> <i>"Well I do one thing at a time but say I start with SS and the homework is say I have to find information on Ancient China or... and I put it down... and well when I finish that I will well just save it in your folder called Social Studies and then I will send it to myself as well so when I get to school I have it on my email as well so I can use it there".</i>	The IC is perceived as external including the web, the Library & books.	The IC is perceived as a social/mediated involving use of IT tools.	IC including web, can be encountered positively & negatively.
A set of information skills.	<b>S3</b> <i>"Well sometimes like if you are on Google and you can't find it [the information] on the first page then its best just to go a couple of pages in and skip a few pages because it's just junk, junk, junk and then there is stuff that you are looking for so sometimes if you go farther into the website you can find good information".</i>	As above	As above.	The IC is approached with scepticism due to perception of unreliability of web information.
Participative practice.	<b>S4</b> <i>"Yes well I put up a website once and also there was this place on Wikipedia where you can't always rely on it. There was this thing that was wrong, so I changed it, I could edit it and I changed it, so it was right".</i> <b>S7</b> <i>"...you have to be careful cause once you post something there you can't take it off... Yes, it's not like oh well I posted it today - I will take it off tomorrow. I just realised this thing. No, once it's there it can't get off".</i>	The IC is perceived as both external, internal and subjective.	The IC is created by people.	The IC (web) is a place where anybody can contribute - there are responsibilities.
The fair and ethical use of information.	<b>S16</b> <i>"Well like its people take other videos that people have made like something they have created and they kind of just took the idea and then maybe they say like hey this is my video".</i> <b>S10</b> <i>"Oh like I write notes - bullet notes like when you write bullet notes you are going to have to transform it into a sentence because you don't like want to do plagiarism..."</i>	The IC perceived as external.	The IC has sources belonging to people & that ownership must be respected.	Students feel responsible not to plagiarise.

**Table 2:** Outcome space: Parents' conceptions of IL

IL is understood as:	Illuminative quotations	Relationship of conception to perceptions of information context (IC)		
		Environmental	Social Human	Affective
IL is a process of using IT tools.	<b>P45</b> <i>"Yes it's about skills and definitely to be able to navigate through that landscape you need to have some computer skills and if you don't then you are lost."</i>	IC perceived as external including web.	IC as social and mediated through using IT tools to communicate via virtual learning platforms.	IC can be experienced in positive & negative ways.
IL is a set of information skills.	<b>P44</b> <i>"Yes I just wanted to say there is this huge need to somehow help them to filter I mean the information overload is huge even as an adult it is difficult to navigate."</i> <b>P45</b> <i>"...we need to teach children and what we all need to learn is how to be an effective seeker of information to know where to search for it to be an effective searcher so perhaps that is the important thing".</i>	As above	IC is mediated by people at home & school.	IC is experienced from a relativist perspective.
IL is knowing how to stay safe online.	<b>P39</b> <i>"Yes and knowing how to stay clear of all the horrible sites that are out there."</i> <b>P49</b> <i>"But you know there is a whole bad world out there and I would say they [students] just have to learn how to move about in it."</i>	As above	IC is external and internal populated by unknown people & inappropriate information.	IC is potentially uncertain, unsafe and unknown.
IL is a way of learning.	<b>P47</b> <i>"I mean before we had the Encyclopaedia Britannica but that's also on a CD ROM and you can download it online now so basically before [the internet] one would go to the encyclopaedia to look up information and get to know what is what and all and then there was the Guinness Book of Records and so you would look in that also to see if there was a record for that but now like it's all computers and this in as much as it is advancing it is also fearsome in that you don't know where it leads to and what if the network fails what then?"</i>	As above	IC is internal, subjective and social.	IC is seen from a relativist perspective - IC has changed from their childhood experience.

**Table 3:** Outcome space: Teachers' conceptions of IL

IL is understood as:	Illuminative quotations	Relationship of conception to perceptions of information context (IC)		
		Environmental	Social Human	Affective
A process of using IT tools.	<b>T31</b> <i>"Well I would define it [Information Literacy] well it's too big but I would define it can the students survive in this environment? Can they learn through the computer? If so how can we best help them to learn through the computer - well the teacher part comes in seriously by you guiding them to specific areas specific websites."</i>	IC perceived as external whereby IT tools are used to find and organise, share learning.	IC is perceived as social and mediated through use of IT tools.	IC including web, IT software/and hardware which is perceived in both positive & negative ways.
A set of information skills.	<b>T37</b> <i>"...I think the whole thing is they have to learn how to find information - how and why and where."</i> <b>T32</b> <i>"If they can really establish the validity of websites well that's just a jumping off point..."</i>	IC is perceived as external in terms of sources to be found out there.	IC is perceived as complex requiring multiple information skills.	IC is characterised by overwhelming amounts of information which problematic for student information use for learning.
IL is content reading to extract relevant information.	<b>T31</b> <i>"... getting back to this content reading and can the students read nonfiction material and pull the information out of it? ...I am finding that the students are still struggling with that textbook. Actually, the majority are struggling with both - they are struggling with reading nonfiction and they are struggling with pulling out the information..."</i>	IC perceived as external & transitioning with text books still having relevance.	IC is perceived as physical and virtual but content reading of physical book remains key	IC perceived as generating vast quantities of information which is challenging to distil for learning.
IL is understanding the nature of information.	<b>T35</b> <i>"You know the students have no boundaries no limits - they see an information world that is open, and they are not scared to jump in there and they just get right in but there is no one putting up those boundaries for them, so they are not old enough to have the ability to differentiate between information."</i> <b>T32</b> <i>"But as adults we know that what we read on the internet we can take with a grain of salt and we know that we can trust you know.edu sites or you know generally trust .org sites and if it's a .com site then we say well alright well I will read it but it's a free for all kind of and I'll see this and we know that intellectually - the kids don't know that - the kids don't understand the different websites and what they mean."</i>	IC is perceived as external particularly regarding the web.	IC is perceived to contain vast quantities of information which can be bias.	IC particularly the web contains information that can be unreliable.

**Table 4:** Outcome space: Librarians' conceptions of IL

IL is understood as:	Illuminative quotations	Relationship of conception to perceptions of information context (IC)		
		Environmental	Social Human	Affective
A process of using IT tools.	<b>LB21</b> "...I mean after all it is IT that we are concerned about we are concerned about the information that is out there virtually that is the information that we have to tackle the most in terms of information literacy right, so you might as well go through the lines of IT."	IC perceived as external whereby IT tools are used to find and organise, share learning.	Librarians perceive their role as the human face of the IC.	Librarians feel excited about the potential of IT tools to support student learning. Linking IL to IT is important for the development of IL.
A set of information skills.	<b>LB22</b> "Yes and to have them to be more discriminating I think I mean to help them because the internet is going to always be there like when they are at home on their own so they just have to learn and in the long run they just have to use sites they know they can trust and it's better to be more discriminating that to be taking you know whatever pops up on their screen."	IC is perceived as external in terms of sources to be found on the web, in books, the school library and interactive media.	Librarians have a 'birds' eye' view of the MS curriculum working with students & teachers.	IC is perceived to be characterised by jewels & garbage which is problematic for students.
IL is critical thinking about information.	<b>LB21</b> "IL ...It is to make them critical thinkers - always judge what you are looking at what you are reading - asking those questions - I think once they have developed that to be critical thinkers they will be okay but if they think that everything out there is true I mean even if you are just reading a newspaper you should be a critical thinker right...if you can distinguish what's good what's bad where is it coming from who is it written for and you are being judgmental the whole way - a critical thinker then I think you are okay."	View of IC as external 'Finger-tip' information.	Critical thinking occurs at subjective individual level but mediated by teachers, librarians and parents.	IC particularly web information can be unreliable or complicated requiring critical thinking.
IL is a way of learning that can be Independent Collaborative/ Life Long Learning	<b>LB21</b> "Okay so let's take an example...I would have on the 6th grade links page of the MS school library...the lesson what's going to happen in the Library, what I want them to know, what I want them to understand and what I want them to be able to do these are called the 'SKUD' [Skills, Knowledge, Understanding and Disposition) ...making sure that you are aligning your standards with what you want the children to know, understand and do during that unit. So that's for the information literacy aspect I might have path finders of ancient China websites that I have found on there...have little video clips that I want them to watch and we are doing a lot of work stations so it's more of a physical place..."	IC is perceived to be web-centric & interactive.	Information seen as situated and social.	IC is dynamic, so IL must be context sensitive.

**Table 5:** Outcome space: IT conceptions of IL

IL is understood as:	Illuminative quotations	Relationship of conception to perceptions of information context (IC)		
		Environmental	Social Human	Affective
A process of using IT tools.	<b>IT18</b> "...an information literate student would be the one that understands and has a skill set to use a computer or electronic device...to access information sources which otherwise wouldn't be available to them and to use that information for critical thought. It's just that you can get a tool the network or whatever mechanism that has the information you want to access and to use that information, glean from it and apply it toward the task at hand, that is how I see it."	IC perceived as external IT tools are used to find & organise, communicate & share learning.	IC is perceived to be dynamic & connected using various IT tools.	The development of IT tools is felt to have caused a paradigm shift in the learning experience changing the roles of educators.
A set of information skills.	<b>IT19</b> "We used to hand them the information now we hand them the tools and show them how to use the tools and direct them to find the information themselves and then comes the toughest part which is what [colleague] said apply it and synthesise it and evaluate it and make sure it works for whatever the task is."	IC is perceived as external in terms of sources to be found on the web, in books, the school library.	IT teachers see librarians as the IL experts fostering these information skills.	The IC is felt to be complex & uncertain requiring a set of information skills.
IL in combination with IT literacy skills is a way of learning how to learn.	<b>IT19</b> "I alluded to it earlier what I hope is that we are providing for kids is something within themselves that tells them they are capable of learning using technology and it's when they are seeking information or it is or synthesising it and evaluating it and during into a product of their own I don't know exactly what they are going to be doing with it in the future but I want them to have it is more a feeling than a knowledge, it is not intellectual."	As above	IC is perceived to external & subjective.	IT teachers have witnessed & reported the changing nature of their roles as IT teachers.

**Table 6:** Outcome space: Administrations' conceptions of IL

IL is understood as:	Illuminative quotations	Relationship of conception to perceptions of Information context (IC)		
		Environmental	Social Human	Affective
A process of using IT tools.	<b>A27</b> "...for example just this morning I had one of the elementary school teachers come over and ask me about getting a website published on her webpage and she had used a medium that some other people were using in the school – I-web..."	IC perceived as external.	The IC is perceived to be changing which leading to information overwhelm.	Development of IT tools is felt to have caused a paradigm shift workplace information experiences.
A set of information skills.	<b>A28</b> "... External Relations is a title that means that we communicate information to the corporate family bodies - we go and do presentations. We communicate with the Alumni; we advertise and do marketing work with the community to develop different events. And now, it's becoming internal communication and so the workload has basically tripled, because the community inside of (the project school) is much greater than this spectrum of people that we work with on a day to day basis, the external community..."	IC is perceived as a multi-layered.	The IC is perceived as both external & internal in that people are sources of tacit information.	The IC is changing & the work of administrators requires IL skills.
IL is IC agility.	<b>A28</b> "...I have been here one year so and partly I am in the role of a new employee learning how to manage the information to my particular situation so then on the management perspective it is also a lot there are many applications to look at to find information and a lot of people to connect to get what you want, and also to relay what you want to say though from both sides I agree with {colleague} it is a large spectrum of applications and types of content and individuals, you have to talk to and to work your way around that needs like a user manual and I mean I can say that I really didn't get a user manual when I started the job but you find your way around based on just talking to people..."	IC is perceived to be external.	IC is perceived to be dynamic / connected / mediated.	Administrators feel their IC to rapidly changing-impacting sense of control.

**Table 7:** Outcome space: Leaderships' conceptions of IL

IL is understood as:	Illuminative quotations	Relationship of conception to perceptions of Information context (IC)		
		Environmental	Social Human	Affective
A process of using IT tools.	<b>L30</b> "... And now, it [curriculum] is becoming more intertwined with library support or information literacy and IT, so that an IT teacher may go to into a class because they are helping particular teacher use particular software for this unit".	IC is perceived external objective environment.	IC is perceived to be mediated by all stakeholders using IT tools for learning.	IC felt to have changed dramatically.
A set of information skills.	<b>L29</b> "... we need to become better facilitators of their search it's not just knowing how to do a wiki space or Moodle or Google docs those are in my mind the technical pieces there is a bigger overarching idea of how do we encourage kids to search knowledgably for more information."	As above	As above	IC is felt to have information of varying quality.
IL is critical inquiry for action embedded in the curriculum.	<b>L29</b> "... the concept of critical inquiry...is exactly what I am hoping for in the future, that this will inspire our 10 year olds to think wow there is a reason why people settle near rivers, if I put these 2 chemicals together this might happen but if I put these 2 chemicals together and put a 3rd one in I wonder what would happen and a lot of that information out there can be put together by them in very new and unique ways ...I am hoping that our kids are encouraged to think and act in many different ways rather than predictable patterns".	As above	Every teacher an IL teacher	IC is felt to offer opportunities for learning & for sharing information on a more global level.
IL is a cognitive agility (the Matrix Metaphor).	<b>L29</b> "I am having a little epiphany as we are speaking... have you both seen the movie the Matrix? Where the... lead fellow is able to bend and be so flexible that he can actually go past the bullets that go past him and yet when he wants information he is able to go right at it and sort of meld his mind with it. I am having a Matrix moment... what {name of colleague} said is absolutely true if this isn't promoting deeper thinking and greater understanding based on being able to cast your net more widely, then I am not sure why we are doing it and that is my hope that all of this technology that we have adopted all of the PD that we are doing, is going to help kids think in a more deep but yet higher level way and to be able to become able to discern what is useful information and what is not particularly useful..."	As above	IC is perceived to be both objective and external and subjective experience.	IC is felt to be dynamic complex challenging.
IL is a situated learning practice.	<b>L29</b> "... I will sit next to somebody and see them doing something on their lap top and I will say can you teach me how to do that or I will sit in on professional development workshops led by a teacher and realise that they are doing something totally different than the other 15/20 other people in the room and that they are all learning from each other around that and that's invaluable".	The web offers opportunities for student/teacher collaboration	IC is a social human IC- information is subjective.	IC is perceived to have the potential for in situ learning



Table 8 below profiles all 27 conceptions, illustrating the wide range of understandings existing across the school community.

**Table 8:** Profile of conceptions of IL

No	Conceptions of IL	<div> <div>Student</div> <div>Parent</div> <div>Teacher</div> <div>Library</div> <div>IT</div> <div>Administration</div> <div>Leadership</div> </div>							
1 - 7	IL is a process of using IT tools.	x	x	x	x	x	x	x	x
8	IL is a set of information skills.[Finding, evaluating, managing, making sense of and communicating learning]	x							
9	IL is a set of information skills.[Understanding information need, information gathering, evaluation, making sense of information, organising and communicating information, and soft skills that are cross curricular]		x						
10	IL is a set of information skills.[Finding and evaluating information]			x					
11	IL is a set of information skills.[Information locating, evaluating, sifting and sorting skills, reading and note taking, citation skills and soft skills including coping and being open minded]				x				
12	IL is a set of information skills.[Critical thinking about information finding, evaluating, synthesising, and applying information]					x			
13	IL is a set of information skills.[Information creation, dissemination communication and management skills]						x		
14	IL is a set of information skills.[Searching knowledgably for and evaluating information]							x	
15	IL is a way of learning.[Context sensitive]		x						
16	IL is a way of learning.[Context sensitive, cross curricular]				x				
17	IL is a situated learning practice.							x	
18	IL is information context agility.						x		
19	IL is cognitive agility - the Matrix Metaphor.								x
20	IL is critical thinking about information.				x				
21	IL is critical inquiry for action embedded in the curriculum.								x
22	IL is understanding the nature of information.			x					
23	IL is content reading to extract relevant information.			x					
24	IL in combination with IT literacy skills is a way of learning how to learn.					x			
25	IL is a participative practice.	x							
26	IL is about fair and ethical use of information.	x							
27	IL is knowing how to stay safe online.		x						
Total Conceptions = 27		4	4	4	4	3	3	5	

There is a degree of commonality in understanding IL as a process of using IT tools and as information skills but in the latter case there are distinctly different understandings of the nature of information skills involved. The next section discusses these findings and their implications for practice within and beyond the LIS profession.

## 4. Discussion and implications

In common with previous phenomenographic studies of conceptions of IL (Bruce, 1997; Williams & Wavell 2007; Boon, Johnston & Webber 2007) this study has revealed extensive variation in the ways stakeholder groups understand IL. The multi-stakeholder nature of this study reveals variation within any one group and also the variation between groups. Some commonality does emerge: the understanding of IL as a process of using IT tools and as a set of information skills is found across contexts and age levels in this school community, albeit with some variation in understanding of the nature of the skills involved. This common ground may offer some scope for the development of a shared understanding of IL. However, the surfacing of a wide range of further conceptions that were shared to some degree by some but not all stakeholder groups illustrates the real-world challenges of lack of shared language and potential confusion in the implementation of IL policies and programmes.

More specifically, the five new conceptions of IL that arise from this study are that IL is:

- a participative practice (Student),
- information context agility (Administration),
- cognitive agility (Leadership),
- critical inquiry for action (Leadership),
- in combination with IT literacy, a way of learning how to learn (IT personnel).

These collectively extend our ways of understanding IL and demand careful consideration in terms of implications for information literacy education. The variation in the ways of understanding IL also shed light on the influence of people's perceptions of their information context. In this sense adult stakeholder groups can be seen to hold a more relativist perspective to their information world that is seen to have changed, be changing and dynamic, thus this emphasis on agility. In contrast, students have grown up with the web and for them this dynamic nature is normative as mirrored in their conception of IL as a participative practice.

Given concerns that differences in professional understandings of IL may pose barriers to progress (e.g. Virkus, 2013; Bønløkke, Kobow & Kristensen, 2015; Todd, 2017) it is interesting to consider how these understandings of IL compare with current professional descriptions of 21st century learner outcomes. The Association of College and Research Libraries' (ACRL) 2016 framework for IL, which is designed for third level education, emphasises the need for IL to shift away from a skills-based focus that characterised their earlier competency standards framework (ACRL, 2000) towards accommodating a 'richer, more complex set of core ideas' about IL (ACRL, 2016). Equally, the newly developed American Association of School Librarians (AASL) (2018) standards framework for learners, school librarians and school libraries reflect the need for a similar a shift in ways of conceptualising IL in the K-12 setting which is the context of this study. The AASL standards framework is anchored by 6 foundations – inquire, include, collaborate, curate, explore and engage – which are described as 'the standards core educational concepts'. Each of these foundational concepts are in turn detailed in three to five competencies for a series of domains for learning including Thinking (cognitive), Creating (psychomotor), Sharing (affective) and Growing (developmental). Some of the conceptions of IL that have surfaced from this study are found to align to a degree with these core educational concepts of the new AASL framework. For example, IL is critical inquiry for action embedded in the curriculum (Leadership) and IL is critical thinking (Librarian). Thus, it would appear in this school community context that conceptions of IL are both similar and different to 21st century learning outcomes as identified from an LIS perspective.

A degree of synergy is also apparent between the range of conceptions of IL held by the school community and Wagner's (2014) seven survival skills of the 21st century:

1. Assessing and analysing information
2. Critical thinking and problem solving
3. Effective oral and written communication
4. Curiosity and imagination
5. Collaboration across networks & leading by influence
6. Agility and adaptability and
7. Initiative and entrepreneurialism

Emanating from a change leadership and education innovation perspective we see that the seven survival skills reflect the conceptions of IL arising from this study to a certain extent but there are also definite differences. The two commonly held conceptions of IL as a set of information skills (including soft skills) and as a process of using IT tools, together with IL as a context (Administration) and cognitive agility (Leadership), are similar to Wagner's skills 1, 3, 4, 5, 6 and 7. The conceptions of IL as critical thinking (Librarian) and critical inquiry for action (Leadership) are similar to Wagner's skills area 2. However, the conceptions of IL as a participative practice (Student), as knowing how to stay safe online (Parent) and fair and equitable use of information (Student) are absent from Wagner's set of survival skills. It is interesting that these conceptions have arisen from a parent and student perspective which may point to a lack of attention or inclusion of 'other' perspectives when considering survival skills for the 21st century. Finally, the conception of IL in combination with IT literacy as a way of learning how to learn that arose from the IT stakeholder group points to a way of learning – a metaliteracy – that is not reflected in the seven survival skills but does reflect the AASL framework with its focus on the affective cognitive and developmental domains. The fact that some of the conceptions of IL arising from this study are not reflected by either Wagner or AASL signals the need for information literacy education practitioners to be mindful of the need to adopt more inclusive approaches to gathering a shared understanding of IL through dialogue with internal and external stakeholders.

Turning attention to the nature of variation arising across stakeholder groups' conceptions of IL in this study are logically related in terms of the focus of the application of the conception, which spans a continuum from an individual immediate focus to a more global collective focus as we descend each of the outcome spaces (Tables 1-7). Many of the conceptions that surfaced in this study tend to have an 'individual immediate' focus, relating IL to the need of an individual learner to be able to use information in learning tasks of immediate concern. For example, conceptions 1 through 8 (Table 8) that IL is a process of using IT tools and a set of information skills, indicate an ever-present focus on the immediate information and learning task, so in that sense the 'immediate' focus is a necessary one. However, there is also a need for information literacy education to provide opportunities for a more 'collective', 'other', 'global' and 'action' focus which is captured, for example, in IL as critical inquiry for action (Leadership) (Table 7), pointing towards more progressive IL teaching and learning from pre-K to K12 and reflected as life-skills needs in the AASL framework and Wagner's survival skills. To some extent there was a sense amongst students that information is external and exists outside of oneself. However, their information use experiences involve the subjective self and others in an ongoing process of making sense of information, seeking clarity on both location and content of information through mediated experiences with peers, friends, family, colleagues and teachers. Therefore, while there is always a need to retain the 'immediate individual' focus the findings indicate a role for information literacy education in shifting perceptions towards lifelong IL and an understanding of the long-term value of IL in a social context.

The second key dimension of variation arising in this study centres on the relationship between the conception of IL with perceptions of the information context. In this study conceptions of IL reflect the varying information contexts of the participants, and their experiences of school life as a learning space and a work place that crosses over into home life and beyond. In this

regard the environmental, social human and affective dimensions of participants' perceptions of their information context identified in this study confirms the complexity of both the nature of information and the information experience, within and across these domains. For example, the parents' conception of IL as knowing how to stay safe online reflects their perception of the information context in terms of the need to access a diversity of sources and the need for protection from exposure to inappropriate information in a highly connected online world. Similarly, teachers' conception of IL as understanding the nature of information reflects their sense of the information context being characterised by vast quantities of information of differing quality and reliability.

Going forward, the challenge to the LIS profession and school leadership is to take account of such perceptions of the information context and their influence on ways of understanding IL when addressing the information literacy education needs of a school community in a more inclusive and holistic way. This demands a shift away from focusing solely on student IL learning needs. The adult stakeholder groups in this study believed every teacher is an IL teacher yet teachers themselves, in addition to parents, feel they also need training to stay current and responsive in a dynamic information context. The school librarian has expertise together with a bird's-eye overview of curriculum to support the design of a whole school community information literacy education focus. However, one or two school librarians cannot alone take on the responsibility to deliver a whole school initiative. The support and involvement of school leadership will be crucial in achieving a relevant information literacy education curriculum, based on a training needs analysis and underpinned by dedicated library staffing and budgetary resources, and addressing student IL, professional development and parent education around IL.

Lastly the research process offered the project school community a platform for dialogue around IL for the first time and in so doing participants became aware of one another's understandings of, and feeling about, IL. The study found that the language used to describe conceptions differed across the groups from the relatively formal academic language used by most of the adult stakeholder groups to the more informal language used by parents and students. Therefore, it may be argued that through dialogue it is possible to create a shared awareness of the differences of understanding of IL as a powerful first-step towards a shared understanding of IL and the development of more effective information literacy education programmes.

## 5. Conclusion

Conceptions of IL in a school community have been revealed through the seven voices of stakeholder groups. Their voices contribute to the depth and breadth of understanding of IL, allowing us to tackle the 'conundrum' as to what IL is, whilst paving the way to calibrate our own ways of thinking and speaking about IL. Based on this study of IL from a school community perspective IL can be understood as a metaliteracy, as a way of learning how to learn that is responsive to the ever-evolving information context and is therefore a socio-contextual practice.

Looking to the future of information literacy education the findings from the study indicate that whilst the overall range of conceptions may mesh well to a certain degree with wider professional understanding of IL and life skills, in practice within the project school community itself, there are many differences concerning the ways IL is understood, spoken about, and applied. Considered collectively this variation illustrates the complex challenges facing all of us tasked with the development of information literacy education. In this context there is a pressing need to continue this form of multi stakeholder research as a basis to inform information literacy education development, both in terms of small scale in-house studies and cross school studies at a national and international level. Finally, the adoption of more inclusive approaches at the conceptual and practice levels is essential to ensure future sustainability of IL development in schools, libraries and learning organisations worldwide.

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